

Claims

I/We claim:

1. A circuit for controlling an ignition coil comprising:
a coil driver in communication with the ignition coil;
a first node for receiving a coil control signal;
a second node connected to the coil driver;
a capacitor in communication with the second node, to gradually increase a voltage at the second node to energize the ignition coil; and
a first diode having a cathode in communication with the first node and an anode in communication with the capacitor for providing a discharge path to discharge the capacitor after the ignition coil has been energized.
2. The circuit according to Claim 1, further comprising a first resistor in communication with the capacitor for controlling a charging time period of the capacitor.
3. The circuit according to Claim 2, further comprising a second resistor in communication with the capacitor for controlling a discharging time period of the capacitor.
4. The circuit according to Claim 3, wherein the charging time period is greater than the discharging time period.
5. The circuit according to Claim 4, wherein the capacitor is in communication with the second node.
6. The circuit according to Claim 1, wherein the resistor and capacitor are in communication with an electrical ground.
7. The circuit according to Claim 6, wherein the cathode of the low voltage zener diode is connected to the first node.

8. The circuit according to Claim 1, wherein the anode of the first diode is connected to the first resistor and the capacitor.

9. The circuit according to Claim 1, wherein the first resistor, the capacitor, and the cathode of the first diode are connected to the second node.

10. The circuit according to Claim 1, comprising a second diode connected between the first resistor and an electrical ground.

11. The circuit according to Claim 4, wherein the cathode of the second diode is connected with the electrical ground.

12. The circuit according to Claim 11, comprising a third diode wherein the third diode is connected between the first resistor and the anode of the second diode.

13. The circuit according to Claim 11, wherein the second diode is connected between the capacitor and ground.

14. The circuit according to Claim 12, wherein the second diode is a low voltage zener diode.

15. The circuit according to Claim 14, wherein the anode of the second diode is in electrical communication with the electrical ground.

16. The circuit according to Claim 1, comprising a third resistor connected between the first resistor and the capacitor.

17. The circuit according to Claim 16, wherein a first end of the third resistor is in communication with the input node and a second end of the third resistor is in communication with the capacitor.

18. The circuit according to Claim 16, wherein the first diode is in electrical parallel connection with the third resistor.

19. A method for controlling an ignition coil comprising the steps of:
increasing the voltage to the ignition coil quickly to a level just below the coil firing voltage;
increasing the voltage to the ignition coil during an ignition period to reduce the feed forward voltage; and
discharging the voltage to the ignition coil quickly after the ignition period.